

Translation

PATENT COOPERATION TREATY

PCT/JP2003/015241



PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY  
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 332-F-PCT	FOR FURTHER ACTION See Form PCT/IPEA/416	
International application No. PCT/JP2003/015241	International filing date (day/month/year) 28 November 2003 (28.11.2003)	Priority date (day/month/year) 12 December 2002 (12.12.2002)
International Patent Classification (IPC) or national classification and IPC H02M 3/28		
Applicant SANKEN ELECTRIC CO., LTD.		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 4 sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising:
  - a. ☐ (sent to the applicant and to the International Bureau) a total of \_\_\_\_\_ sheets, as follows:
    - ☐ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
    - ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
  - b. ☐ (sent to the International Bureau only) a total of \_\_\_\_\_, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

- ☒ Box No. I Basis of the report
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

Date of submission of the demand 08 April 2004 (08.04.2004)	Date of completion of this report 07 January 2005 (07.01.2005)
Name and mailing address of the IPEA/JP	Authorized officer
Facsimile No.	Telephone No.

# INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/JP2003/015241

## Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

- ☐ This report is based on translations from the original language into the following language \_\_\_\_\_, which is language of a translation furnished for the purpose of:
- ☐ international search (under Rules 12.3 and 23.1(b))
  - ☐ publication of the international application (under Rule 12.4)
  - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

- ☒ The international application as originally filed/furnished
- ☐ the description:
- pages \_\_\_\_\_, as originally filed/furnished
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☐ the claims:
- pages \_\_\_\_\_, as originally filed/furnished
- pages\* \_\_\_\_\_, as amended (together with any statement) under Article 19
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☐ the drawings:
- pages \_\_\_\_\_, as originally filed/furnished
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to sequence listing (*specify*): \_\_\_\_\_

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to sequence listing (*specify*): \_\_\_\_\_

\* If item 4 applies, some or all of those sheets may be marked "superseded."

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/JP03/15241

**Box No. V** Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

## 1. Statement

Novelty (N)

Claims

1-9

YES

Claims

NO

Inventive step (IS)

Claims

3-9

YES

Claims

1, 2

NO

Industrial applicability (IA)

Claims

1-9

YES

Claims

NO

## 2. Citations and explanations (Rule 70.7)

Document 1: JP, 10-225116, A (Sanken Electric Co., Ltd.), 21 August, 1998 (21.08.98)

Document 2: JP, 2002-142452, A (Mitsumi Electric Co., Ltd.), 17 May, 2002 (17.05.02)

Document 3: JP, 2002-6967, A (Mitsumi Electric Co., Ltd.), 11 January, 2002 (11.01.02)

Document 4: JP, 2000-132248, A (NEC Fukushima, Ltd.), 12 May, 2000 (12.05.00)

Document 5: JP, 6-217544, A (Sony Corp.), 5 August, 1994 (05.08.94)

Document 6: Microfilm of the specification and drawings annexed to the written application of Japanese Utility Model Application No. 138691/1985 (Laid-open No. 46913/1987) (TDK Corp.), 23 March, 1987 (23.03.87)

Document 7: JP, 46-13427, B (Yokogawa Electric Corp.), 9 April, 1971 (09.04.71)

The subject matters of claims 1 and 2 do not appear to involve an inventive step in view of documents 1-3 cited in the ISR.

Both of (A) a direct-current power supply apparatus described in document 1 having (a) at least one switching element to convert input direct currents from a direct-current power supply to high-frequency power sporadically by on/off operation, (b) a control circuit to perform on/off control of the said switching element, and (c) a rectifier and smoother circuit to convert the said high-frequency power obtained from the said switching element to direct-current output, and supply it to a load, wherein the said control circuit has (d) an output current control circuit to generate output current control signals whereby the on and off periods of the said switching element are controlled such that output direct currents flowing in the said load are at the rated value, and (e) a reference-voltage generating means of generating reference voltages to determine the rated value of the said output current control circuit, and (B) a direct-current power apparatus described in documents 2 and 3 having a drive-current control means to make drive currents supplied to a reference voltage generating means almost constant, belong to technical fields closely related to each other, and so a person skilled in the art could have easily conceived of the idea of applying the drive-current control means described in documents 2 and 3 to the direct-current power supply apparatus described in document 1.

## Supplemental Box

In case the space in any of the preceding boxes is not sufficient.  
Continuation of: V

The subject matters of claims 3-9 appear to involve an inventive step in view of the documents cited in the ISR. Documents 1-7 do not describe a direct-current power supply apparatus whose drive-current control means has (a) an output voltage detecting means to detect the output voltage of a rectifying and smoothing circuit, (b) a voltage comparing means that generates a first output signal when the voltage detected by the said output voltage detecting means is higher than a threshold voltage, and a second output signal when the voltage detected by the said output voltage detecting means is lower than a threshold voltage, and (c) a current varying means that supplies drive currents from the rectifying and smoothing circuit directly to a reference voltage generating means when the said voltage comparing means generates a first output signal, and adds other drive currents to the drive currents and supplies the obtained currents to the reference voltage generating means when the voltage comparing means generates a second output signal, and such power supply apparatus would not be obvious to even a person skilled in the art.